

What is claimed:

1. A method of sequencing DNA fragments comprising:
placing a DNA sample within a buffer in separation apparatus;
applying an electric field across the separation apparatus to create a
bias in the buffer such that the DNA sample migrates from one end of the apparatus to
5 another end along a migration channel;
separating the DNA sample into fragments along the migration channel
within the buffer;
detecting fluorescent light emitted from the fragments along the
migration channel; and,
10 generating a full image of the separation apparatus and the separated
DNA fragments based on the detecting.

2. The method of claim 1 wherein the buffer is a gel.

3. The method of claim 1 wherein the buffer is a polymer
solution.

4. The method of claim 1 wherein the separation apparatus
comprises at least one capillary tube.

5. The method of claim 1 wherein the separation apparatus
comprises a set of glass plates with lithographically etched channels.

6. The method of claim 1 wherein the detecting comprises
detecting using a full-width array scanner.

7. The method of claim 1 wherein the detecting comprises
detecting using an amorphous silicon two-dimensional image sensor array.

8. The method of claim 1 wherein the detecting comprises detecting at a first time and then repeating the detecting after DNA fragments migrate through the gel for an additional period of time.

9. An apparatus for the sequencing of DNA comprising:
a separation apparatus operative to receive a DNA sample and facilitate migration and separation into fragments of the DNA sample along a migration channel within the apparatus;

5 a detector operative to detect light emitted the DNA fragments along the migration channels; and,

an image processor operative to generate image data representing a full image of the separation apparatus and the fragments.

10. The apparatus of claim 9 wherein the separation apparatus comprises:

at least one capillary tube;

a buffer; and,

5 a means for providing an electric field to create a bias between ends of the capillary tube.

11. The apparatus of claim 9 wherein the separation apparatus comprises:

a stacked pair of lithographically etched glass plates;

a buffer; and,

5 a means for providing an electric field to create a bias between ends of the glass plates.

12. The apparatus of claim 9 wherein the detector is a full-width array scanner.

13. The apparatus of claim 9 wherein the detector is a large area two-dimensional amorphous silicon image sensor array.

14. A system for sequencing DNA fragments comprising:

means for placing a DNA sample within a buffer in separation apparatus;

5 means for applying an electric field across the separation apparatus to create a bias in the buffer such that the DNA sample migrates from one end of the apparatus to another end along a migration channel;

means for separating the DNA sample into fragments along the migration channel within the buffer;

10 means for detecting fluorescent light emitted from the illumination fragments along the migration channel; and,

means for generating a full image of the separation apparatus and the separated DNA fragments based on the detecting.

15. The system of claim 14 wherein the detecting means comprises a full-width array scanner.

16. The system of claim 14 wherein the detecting means comprises an amorphous silicon two-dimensional image sensor array.

17. The system of claim 14 wherein the illumination means comprises a laser that illuminates perpendicular to the direction of migration of the DNA fragments.

18. The system of claim 14 wherein the illumination means comprises a laser that illuminates along the direction of migration of the DNA fragments.

19. The system of claim 14 wherein the illumination means comprises a light emitting diode bar.

20. The system of claim 14 wherein the illumination means comprises a laser attached to the rear of the detector.